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In re Patent Application of

Date: May 15, 2008

Applicants: Bednorz et al.

Docket: YO987-074BZ

Serial No.: 08/479,810

Group Art Unit: 1751

Filed: June 7, 1995

Examiner: M. Kopec

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION
TEMPERATURE, METHODS FOR THEIR USE AND PREPARATION

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

CORRECTED APPEAL BRIEF

Part VII

CFR 37 §41.37(c)(1)(vii)

VOLUME 3

Part 8

Argument For the Patentability of Each Rejected Claims 488-543

Respectfully submitted,

/Daniel P Morris/

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Yorktown Heights, New York 10598

CLAIM 488/482/480/476

CLAIM 488/482/480/476 recites:

CLAIM 476 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 480 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 482 An apparatus according to claim 480, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 488 An apparatus according to claim 482, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentence bridging page 1 and 2 of the specification states
"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 488/482/480/477

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a superconductive current carrying element comprising a Tc
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said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 477 An apparatus according to claim 476, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26 K.

CLAIM 480 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

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CLAIM 488/482/480/478

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CLAIM 476 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 478 An apparatus according to claim 476, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said Tc.

CLAIM 480 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 482 An apparatus according to claim 480, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 488 An apparatus according to claim 482, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

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CLAIM 489

CLAIM 489 recites:

CLAIM 476 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 483 An apparatus according to claim 476, wherein
said superconductive current carrying element comprises copper oxide.

CLAIM 489 An apparatus according to claim 483, wherein
said superconductive current carrying element can be made according to known principles of ceramic science.

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CLAIM 490/484/476

CLAIM 490/484/476 recites:

CLAIM 476 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 484 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 490 An apparatus according to claim 484, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

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a superconductive current carrying element comprising a T_c
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said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

CLAIM 477 An apparatus according to claim 476, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26 K.

CLAIM 484 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

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CLAIM 478 An apparatus according to claim 476, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

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CLAIM 479 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 485 An apparatus according to claim 479, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

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CLAIM 492

CLAIM 492 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 492 The superconducting apparatus of claim 361, where said phase is crystalline with a structure comprising a perovskite related structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement

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CLAIM 493

CLAIM 493 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 362 The superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of said rare earth or element comprising a rare earth characteristic in said composition.

CLAIM 493 The superconducting apparatus of claim 362, where said phase is crystalline with a structure comprising a perovskite related structure.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

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CLAIM 494

CLAIM 494 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 494 The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite related structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

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CLAIM 495

CLAIM 495 recites:

CLAIM 379 A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or element (RE) comprising a rare earth characteristic, said composition comprising a crystalline structure comprising a layered characteristic and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

a current source for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 495 The combination of claim 379, wherein said crystalline structure comprises a perovskite related structure.

This claim should be allowed since claim 379 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

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CLAIM 496

CLAIM 496 recites:

CLAIM 496 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite related structure and a layered characteristic, the composition having a superconductor transition temperature Tc of greater than or equal to 26°K;
- (b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature Tc of the superconductive composition; and
- (c) means for causing an electric current to flow in the superconductor element.

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CLAIM 479

CLAIM 497 recites:

CLAIM 497 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) means for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$ of the superconductive composition; and
- (c) means for causing an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 498

CLAIM 498 recites:

CLAIM 498 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 499

CLAIM 499 recites:

CLAIM 499 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 500

CLAIM 500 recites:

CLAIM 500 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 501

CLAIM 501 recites:

CLAIM 501 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 502

Claim 502 which is allowed recites:

CLAIM 502 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 503

Claim 503 which is allowed recites:

CLAIM 503 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 504

Claim 504 which is allowed recites:

CLAIM 504 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 505

Claim 505 which is allowed recites:

CLAIM 505 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 506

Claim 506 which is allowed recites:

CLAIM 506 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 507

Claim 507 which is allowed recites:

CLAIM 507 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K ;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 508

CLAIM 508 recites:

CLAIM 508 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 509

CLAIM 508 recites:

CLAIM 509 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature Tc of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature Tc of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 510

CLAIM 510 recites:

CLAIM 510 An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 511

Claim 511 which is allowed recites:

CLAIM 511 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 512

Claim 512 which is allowed recites:

CLAIM 512 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K ;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 513

Claim 513 which is allowed recites:

CLAIM 513 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 514

Claim 514 which is allowed recites:

CLAIM 514 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 515

Claim 515 which is allowed recites:

CLAIM 515 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 516

CLAIM 516 recites:

CLAIM 146 An apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 516 An apparatus of claim 146 wherein said means for carrying a superconductive current is comprised of an oxide.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 517

CLAIM 517 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 518

CLAIM 518 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

CLAIM 518 An apparatus according to claim 517, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 519

CLAIM 519 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

CLAIM 519 An apparatus according to claim 517, further
including a temperature controller for maintaining said
superconductive current carrying element at a temperature
less than said T_c .

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner

has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 520/517

CLAIM 520/517 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

CLAIM 520 An apparatus according to anyone of claims
517, 518 or 519, wherein said superconductive current
carrying element comprises one or more of the group
consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd,
Pm, Sm, Eu, Gd, Tb, Dy, Ho Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 520/518

CLAIM 520/518 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a metallic, oxygen-deficient, perovskite-like, mixed valent copper compound.

CLAIM 518 An apparatus according to claim 517, wherein said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 520 An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 520/519

CLAIM 520/519 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a metallic, oxygen-deficient, perovskite-like, mixed valent copper compound.

CLAIM 519 An apparatus according to claim 517, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 520 An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 521/517

CLAIM 521/517 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

CLAIM 521 An apparatus according to anyone of claims
517, 518 or 519, wherein said superconductive current
carrying element comprises one or more of Be, Mg, Ca, Sr,
Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm,
Sm, Eu Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 521/518

CLAIM 521/518 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

CLAIM 518 An apparatus according to claim 517, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 521 An apparatus according to anyone of claims
517, 518 or 519, wherein said superconductive current
carrying element comprises one or more of Be, Mg, Ca, Sr,
Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm,
Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 521/519

CLAIM 521/519 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a metallic, oxygen-deficient, perovskite-like, mixed valent copper compound.

CLAIM 519 An apparatus according to claim 517, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 521 An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 522

CLAIM 522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentence bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 523

CLAIM 523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 524

CLAIM 524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 525/522

CLAIM 525/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 525 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises one or more of the group
consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd,
Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 525/523

CLAIM 525/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 525/524

CLAIM 525/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 526/522

CLAIM 526/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 526 An apparatus according to anyone of
claims 522, 523 or 524, wherein said superconductive
current carrying element comprises one or more of
Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y,
La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm,
Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement

Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 526/523

CLAIM 526/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 526/524

CLAIM 526/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 527/525/522

CLAIM 527/525/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 527 An apparatus according to claim 525, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 527/525/523

CLAIM 527/525/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 527 An apparatus according to claim 525, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 527/525/524

CLAIM 527/525/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 527 An apparatus according to claim 525, wherein
said superconductive current carrying element comprises a
transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 528/526/522

CLAIM 528/526/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 528 An apparatus according to claim 526, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 528/526/523

CLAIM 528/526/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 528 An apparatus according to claim 526, wherein
said superconductive current carrying element comprises a transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 528/526/524

CLAIM 528/526/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 528 An apparatus according to claim 526, wherein
said superconductive current carrying element comprises a
transition metal.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 529

CLAIM recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 529 An apparatus according to claim 522, wherein
said superconductive current carrying element comprises
copper oxide.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 530/522

CLAIM 530/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 530 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element is substantially perovskite.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 530/523

CLAIM 530/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 530 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element is substantially perovskite.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 530/524

CLAIM 530/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 530 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element is substantially perovskite.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 531/522

CLAIM 531/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 531 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite-like structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 531/523

CLAIM 531/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 531 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a perovskite-like structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 531/524

CLAIM 531/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 531 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite-like structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 532/522

CLAIM 532/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 532 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite related structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 532/523

CLAIM 532/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 532 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a perovskite related structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 532/524

CLAIM 532/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 532 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite related structure.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 533/522

CLAIM 533/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 533 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a nonstoichiometric amount of
oxygen.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner

has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 533/523

CLAIM 533/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 533 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a nonstoichiometric amount of oxygen.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 533/524

CLAIM 533/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further
including a temperature controller for maintaining said
superconductive current carrying element at a temperature
less than said T_c .

CLAIM 533 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a nonstoichiometric amount of
oxygen.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 534/522

CLAIM 534/522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 534 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a layered structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 534/523

CLAIM 534/523 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a Tc
≥ 26K

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26K.

CLAIM 534 An apparatus according to anyone of claims
522, 523 or 524, wherein said superconductive current
carrying element comprises a layered structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 534/524

CLAIM 534/524 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26K$

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 An apparatus according to claim 522, wherein
said superconductive current carrying element is at a temperature greater than or equal to 26K.

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

CLAIM 534 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a layered structure.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 535

CLAIM 535 recites:

CLAIM 535 An apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, said superconductor being comprised of at least four elements, none of which is a means for carrying a superconducting current at a temperature greater than or equal to 26°K, a temperature means for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and a means for passing current through said superconductor while in said superconducting state.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 536

CLAIM 536 recites:

CLAIM 536 An apparatus comprising:

a means for carrying a superconductive current exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling said composition to a temperature greater than or equal to 26°K at which temperature said means for carrying a superconductive current exhibits said superconductive state, and

a current source for passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

This claim is in means plus function form and under *In re Donaldson* 29 USPQ 2d1845 (Fed. Cir. 1994) should be allowed since the Examiner has allowed claims to the specific examples described in Applicants' specification which corresponds to all of the allowed claims. The Examiner provides no reason for not following *In re Donaldson*.

CLAIM 537

CLAIM 537 recites:

CLAIM 537 An apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 538

CLAIM 538 recites:

CLAIM 537 An apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 538 The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a metal oxide.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 539

CLAIM 539 recites:

CLAIM 537 An apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 539 The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a transition metal oxide.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 540

CLAIM 540 recites:

CLAIM 540 An apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 541

CLAIM 541 recites:

CLAIM 540 An apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 541 An apparatus according to claim 540, where said composition is comprised of a metal oxide.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 542

CLAIM 542 recites:

CLAIM 540 An apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 541 An apparatus according to claim 540, where said composition is comprised of a metal oxide.

CLAIM 542 An apparatus according to claim 541, where said composition is comprised of a transition metal oxide.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 543

CLAIM 543 recites:

CLAIM 543 A combination, comprising:

an oxygen containing composition exhibiting the onset of a
DC substantially zero resistance state at an onset
temperature in excess of 30°K, and

means for passing an electrical current through said composition while it is in said substantially zero resistance state.

The Examiner has not made as to this claim a *prima facie* case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

Respectfully submitted,

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